

Claims

1. A correction data measurement method comprising:

a first step at which an arithmetic part receives
5 measurement data indicating a refractive power distribution of
a subject eye and obtains lower order aberrations and higher
order aberrations on the basis of the measurement data;

a second step at which the arithmetic part judges whether
the higher order aberrations have specified values or higher;

10 and

a third step at which the arithmetic part changes, in a
case where the higher order aberrations have the specified
values or higher, lower order aberration quantities
corresponding to the higher order aberrations having the
15 specified values or higher and obtains appropriate correction
data suitable for the subject eye.

2. A correction data measurement method according to
claim 1, wherein at the third step, in a case where higher order
20 spherical aberrations or asymmetrical higher order coma
aberration quantities have the specified values or higher, the
arithmetic part changes the lower order aberration quantities
corresponding to defocus, and obtains the appropriate
correction data suitable for the subject eye.

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3. A correction data measurement method according to
claim 1, wherein at the third step, in a case where higher order
astigmatism aberration quantities have the specified values or
higher, the arithmetic part changes the lower order aberration

quantities corresponding to astigmatism components, and obtains the appropriate correction data suitable for the subject eye.

5 4. A correction data measurement method according to claim 2 or 3, wherein at the third step, the arithmetic part changes the lower order aberration quantities to raise a Strehl ratio, and obtains the appropriate correction data suitable for the subject eye.

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5. A correction data measurement method according to claim 2 or 3, wherein at the third step, the arithmetic part changes the lower order aberration quantities to decrease a phase shift, and obtains the appropriate correction data
15 suitable for the subject eye.

6. A correction data measurement method according to claim 1, further comprising a fourth step of storing the correction data obtained by the arithmetic part into a memory
20 or displaying it on a display part.

7. A correction data measurement method according to claim 6, wherein at the fourth step, on the basis of the correction data obtained by the arithmetic part, a luminous
25 distribution image of a Landolt's ring or an arbitrary image is obtained, and is displayed on a display part.

8. A computer readable recording medium recording a correction data measurement program for causing a computer to

execute:

a first step at which an arithmetic part receives measurement data indicating a refractive power distribution of a subject eye and obtains lower order aberrations and higher order aberrations on the basis of the measurement data;

a second step at which the arithmetic part judges whether the higher order aberrations have a specified values or higher; and

a third step at which the arithmetic part changes, in a case where the higher order aberrations have the specified values or higher, lower order aberration quantities corresponding to the higher order aberrations having the specified value or higher and obtains appropriate correction data suitable for the subject eye.

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9. A correction data measurement program for causing a computer to execute:

a first step at which an arithmetic part receives measurement data indicating a refractive power distribution of a subject eye and obtains lower order aberrations and higher order aberrations on the basis of the measurement data;

a second step at which the arithmetic part judges whether the higher order aberrations have a specified values or higher; and

a third step at which the arithmetic part changes, in a case where the higher order aberrations have the specified value or higher, lower order aberration quantities corresponding to the higher order aberrations having the specified value or higher and obtains appropriate correction

data suitable for the subject eye.

10. A correction data measuring apparatus comprising:
an arithmetic part for obtaining an optical
5 characteristic of a subject eye by performing a Zernike
analysis on the basis of inclination angles of light fluxes
obtained by a first light receiving part, wherein

the arithmetic part includes:

first means for receiving measurement data indicating a
10 refractive power distribution of the subject eye and obtaining
lower order aberrations and higher order aberrations on the
basis of the measurement data;

second means for judging whether the higher order
aberrations have a specified values or higher, and

15 third means for changing, in a case where the higher order
aberrations have the specified values or higher, lower order
aberration quantities corresponding to the higher order
aberrations having the specified values or higher and obtaining
appropriate correction data suitable for the subject eye.

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11. A correction data measuring apparatus according to
claim 10, wherein in a case where higher order spherical
aberrations or asymmetrical higher order coma aberration
quantities have the specified value or higher, in the third
25 means, the arithmetic part changes the lower order aberration
quantities corresponding to defocus, and obtains the
appropriate correction data suitable for the subject eye.

12. A correction data measuring apparatus according to

claim 10, wherein in a case where higher order spherical aberration quantities have the specified values or higher, in the third means, the arithmetic part changes the lower order aberration quantities corresponding to astigmatism components, and obtains the appropriate correction data suitable for the subject eye.

13. A correction data measuring apparatus according to claim 11 or 12, wherein in the third means, the arithmetic part changes the lower order aberration quantities to increase a Strehl ratio and obtains the appropriate correction data suitable for the subject eye.

14. A correction data measuring apparatus according to claim 11 or 12, wherein in the third means, the arithmetic part changes the lower order aberration quantities to decrease a phase shift and obtains the appropriate correction data suitable for the subject eye.

15. A correction data measuring apparatus according to claim 10, further comprising fourth means for storing the correction data obtained by the arithmetic part in a memory or displaying it on a display part.

16. A correction data measuring apparatus according to claim 15, wherein the fourth means obtains a luminous distribution image of a Landolt's ring or an arbitrary image on the basis of the correction data obtained by the arithmetic part and displays it on the display part.

17. A correction data measuring apparatus according to claim 10, 11, 12 or 15, further comprising:

a first illuminating optical system including a first
5 light source for emitting a light flux of a first wavelength,
for providing illumination by condensing a first illuminating
light flux from the first light source on a vicinity of a retina
of the subject eye; and

a first light receiving optical system including a first
10 conversion member for converting a reflected light flux
reflected from the retina of the subject eye into at least 17
beams, and a first light receiving part for receiving the plural
light fluxes converted by the first conversion member as a first
received light signal, for guiding the reflected light flux to
15 the first light receiving part,

wherein the arithmetic part receives the first received
light signal as the measurement data, and performs the Zernike
analysis on the basis of the inclinations of the light fluxes
obtained by the first light receiving part to obtain the lower
20 order aberrations and the higher order aberrations as the
optical characteristic of the subject eye.

18. A correction data measurement method comprising
steps of:

25 receiving measurement data indicating a refractive power
distribution of a subject eye and obtaining lower order
aberrations and higher order aberrations on the basis of the
measurement data;

forming a relational expression of a Strehl ratio and a

phase shift (PTF) from the obtained lower order aberrations and higher order aberrations; and

changing the lower order aberrations to obtain a condition under which the Strehl ratio becomes maximum and the
5 phase shift (PTF) becomes substantially zero, and making lower order aberration quantities at that time a correction value.